NOTE XXXII.

ON A LARGE SPECIMEN OF ORTHRAGORISCUS ON THE DUTCH COAST.

BY

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(Plate 8).

On the 13th of Dec. 1889 a great Sun-fish was washed ashore at Ameland. Through kind intervention of the mayor of the island, D. W. J. baron van Heeckeren, the gigantic fish was sent up to the Leyden Museum, where it arrived a few days afterwards in a satisfactory state. As far as I know of, it is one of the largest specimens of *Orthragoriscus*. The dimensions are as follows:

Distance from the tip of the mouth to the extremity of the tail	M. 2.23
Distance from the root of the dorsal fin to the root of the anal fin, measured at the anterior part of the fins	M. 1.40
Distance from the root of the dorsal fin to the root of the anal fin, measured at the posterior part of the fins	M. 1.12
Distance from the top of the dorsal fin to the top of the anal fin	M. 2.80
Distance from the tip of the mouth to the anterior part of the root of the dorsal fin	M. 1.45
Distance from the tip of the mouth to the anterior part of the root of the anal fin	M. 1.53
Breadth of the dorsal fin measured at the root	M. 0.42

Breadth of the anal fin measured at the root.	M. 0.35
Distance between the tip of the upper jaw and the anterior part of the root of the pectoral fin.	M. 0.67
Distance between the tip of the upper jaw and the centre of the eye	M. 0.30
Horizontal diameter of the eye	M. 0.08^5
Vertical diameter of the eye	M. 0.07
Greatest thickness measured between the pectoral fins	M. 0.45
Thickness measured just behind the pectoral fins.	M. 0.42
Breadth of the pectoral fin measured at its root.	M. 0.21

The weight of the liver amounted to 68 kilograms, whilst the ovarium (our specimen is a female) weighed 4.5 kilograms. The diameter of the best developed eggs varied between 0.42 m.m. and 0.45 m.m.

There was hardly any trace of asymmetry, as found by Prof. Harting with *Orthragoriscus ozodura* 1)).

On trying to determine the species into which this Sun-fish has to be classed, we meet with great difficulties; for whilst ichthyologists as Günther and Day class all specimens of *Orthragoriscus* into 2 or 3 species, viz. *O. mola*, *O. lanceolatus* and *O. truncatus*, the first of which only is said to be found on our coast, Ranzani divided them into 6 genera and 15 species. This is to be accounted for that Ranzani made his classification 2)) after an examination of stuffed specimens, or of the description of those stuffed specimens, which examination he carried on in no critical manner, as is now generally acknowledged, even by Italian ichthyologists.

It must be owned that descriptions or drawings made from live or fresh specimens are, comparatively speaking, rare. Among these are to be mentioned: A. J. Retzius'

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1) P. Harting, Notices zoölogiques, anatomiques et histiologiques sur l'*Orthragoriscus ozodura*. Utrecht, 1865.

2) Ranzani, Nov. Comm. Ac. Sc. Inst. Bonon. III, 1839, p. 80.

description and figure of *Tetrodon mola* [1]), the drawing given by Schlegel of a specimen captured in Japan [2]), the treatise of Jan Plancus [3]), Yarrel's drawing [4]), Harting's minute description and accurate drawing of *Orthragoriscus ozodura* mentioned before, Steenstrup and Lütken's detailed description of *Mola nasus* [5]), and Day's figure [6]). However I can hardly believe that these 7 specimens of *Orthragoriscus* belong to one species.

First and foremost I wish to call attention to the presence or the absence of the folded band between the body and the caudal fin. Such a folded band is distinctly visible in the drawings, mentioned of Retzius, Schlegel, Plancus and Yarrel, not however in those of Harting and Day, whilst Harting expressly states the absolute absence of such a band in the specimen described by him. Steenstrup and Lütken, too, in the description of *Mola nasus*, state that dorsal and anal fin are distinctly separated from the body by a deep fold of the skin, whereas the thick caudal fin runs on unbroken with the body [7]).

Retzius mentions, that, on being dried, the folds in the band (Rynkbandet) disappear altogether, and so it is not impossible, that this band was overlooked, when stuffed specimens were examined and described. Still its presence may even in a dried state be very distinctly noted. Whereas namely, owing to dermal ossifications, the skin of whole the body as well as that of the caudal fin is covered all over with small pricks of various size, these pricks are not found on the folded band, except on the ridges of that band. In a dried state that folded band is clearly distinct from the rest of the skin, and appears as a smooth

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1) Retzius, Vet. Ac. Nya Handl. VI, 1785, p. 115, tab. 4.
2) Fauna Japonica, Poissons, tab. CXXVII.
3) Jan Plancus, Comm. Inst. Bonon. III, p. 331, tab. 8.
4) Yarrel, British Fishes, 3rd edition, p. 432.
5) Steenstrup and Lütken, Overs. Dansk. Vid. Selsk. Forh. 1863, p. 36.
6) F. Day, The Fishes of Great Britain and Ireland, vol. II, pl. CXLVIII.
7) l. c. p. 37: „tykke Halefinne, der gik i Eet med Kroppen."

band, occasionally interrupted by narrow stripes of inequalities.

Of the four specimens, to be found under the name of *Orthragoriscus mola* in the Leyden Museum, up to the 13th of Dec. 1889, two specimens present no traces of a dermal fold; the former of these, long about M. 1.10, was captured on the Dutch coast, the latter, long about M. 0.90, off Leghorn. Our third specimen is from Japan, long about M. 0.90, and presents, like the picture in the Fauna Japonica, a distinct band between the body and the caudal fin. The fourth specimen, long about M. 0.65 from the Cape of good Hope, is in a very bad state of preservation; the upper part of the body shows no traces of the folded band, whereas the lower part would seem to show them, but in my opinion these are no remains of the folded band, as the epidermis, owing probably to maceration, has disappeared, in consequence of which a smooth surface has been produced.

Hence, there are specimens of *Orthragoriscus* with which the caudal fin is separated from the body by a folded band, and others showing no such folded band. An examination of the different specimens proves at once that this cannot possibly be the result of age. Retzius' specimen with folded band measured 1 foot, 11 inches, our specimen from Japan M. 0.90, whilst Plancus' specimen weighed 400 ℔. Nor can sex produce this difference, seeing that Harting's specimen lacking the folded band was a female, and that the *Orthragoriscus* treated of in this note is also a female, provided with such a folded band.

In the second place I wish to call attention to the hump above the mouth, which, according to Günther's Catalogue (1), develops with age, and is topped by an osseous tubercle, which in very young specimens is a spine. On comparing different descriptions and figures with each other, we find that, as to the absence or presence of this

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1) A. Günther, Catalogue of the fishes in the British Museum, vol. VIII. p. 317.

hump, there also obtains a great difference among different individuals.

Harting, in his description of *Orthragoriscus ozodura*, speaking of the hump and the osseous tubercle says: »Ce disque osseux donne au museau de l'animal une certaine ressemblance avec celui de quelques mammifères fouisseurs à nez prominent et tronqué" [1]).

Steenstrup and Lütken also mention a conic snout or proboscis with their specimen of *Orthragoriscus* without folded band [2]).

Also Houttuyn's engraving [3]) and Yarrel's figure, mentioned above, show a snout protruding above the mouth. On comparing Schlegel's drawing in the Fauna Japonica or Retzius' figure we find not the slightest trace of a snout or proboscis, on the contrary the line from the mouth to the beginning of the caudal fin runs on in a convex curve over the eye.

Moreover Harting mentions »une crête verticale qui s'élève lelong du dos et atteint 4 centimètres de hauteur. Postérieurement elle se confond avec la nageoire dorsale."

Our specimen from Ameland shows no traces of such a crest, nor do I find mention made of it in other descriptions; on the other hand I find them with two of the specimens in our Museum mentioned before, viz. with the specimen from the Dutch coast, and with that caught off Leghorn. Moreover these two present the osseous tubercle above the mouth. Our specimen from Japan shows no sign either of the crest on the back, or of an osseous tubercle above the mouth.

As regards the splitting up of the jaws, I do not believe this to be a reliable feature for specific distinction, as specimens of different size display different stages of development.

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1) Harting l. c. p. 6.

2) Steenstrup and Lütken, l. c.: »at Hovedet sprang frem foran og over den lille Mund i Form af en but kegledannet Snude eller Tryne."

3) Houttuyn, Natuurlijke Historie, Dl. I, p. 494, Tafel LXVIII, fig. 7.

A very young specimen (about 4 c.m.), which Prof. A. A. W. Hubrecht kindly lent me for comparison from the Utrecht Museum, presents two clearly separated teeth in the upper as well as in the lower jaw.

On the other hand as regards the proportion between length and hight, as well as the place of insertion of the dorsal and anal fin, I believe these to be reliable specific characteristics with fishes of nearly the same size. For this purpose however it is necessary that the measurements should be very carefully taken from the fresh fish, in as much as these dimensions undergo considerable change after stuffing.

I quite agree with Prof. Harting, that the only way to solve this difficult question is to have good figures made in fresh state of all specimens captured, and to publish these drawings with a minute description.

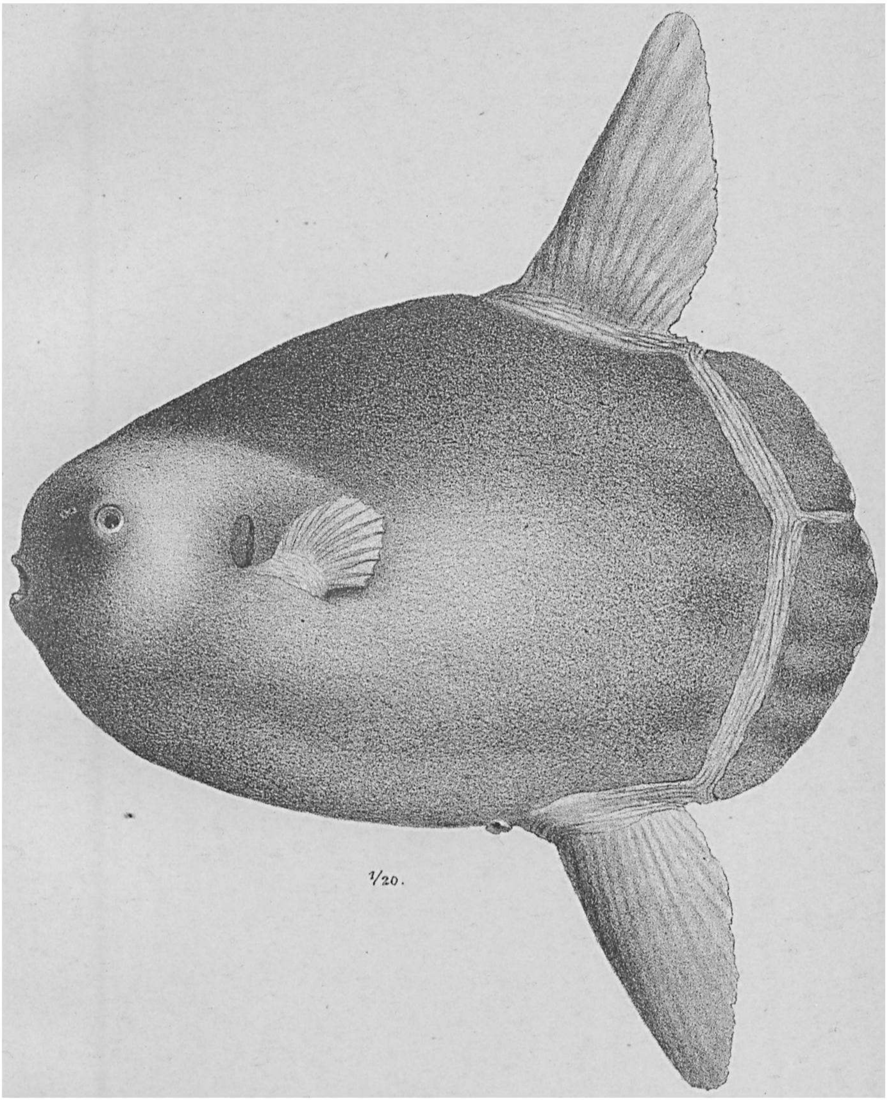
That is why I have had a drawing made of our Ameland specimen, immediately after its arrival. This drawing, made under my direction by Mr. R. Raar at $^1/_{20}$ of the natural size, renders the outward form and the proportions of the animal most correctly, and is added to this note in an engraving.

On examining this engraving we immediately notice a particularity of the folded band, which as far as I know, has never been noticed before. This band, broad 11 c.m. in the middle of the upper part of the body, and 10 c.m. in the middle of the lower part, parts off backward, exactly opposite the mouth in the middle of its whole length. The side-branch thus produced, runs on to the extremity of the caudal fin, which it divides into an upper and a lower part. There is a total absence of dermal ossifications on this folded band, as well as on its side-branch, except on the prominent ridges. The elasticity of the caudal fin is considerably heightened by this particular arrangement.

The rest of the body is covered with bony little pricks of different size. Those on the head and especially those over the eyes are greatest in size (about 2 m.m.) and closest together. On the flanks of the body these little pricks are smaller (about 1 m.m.) and farther removed from each other, however they are broader there and form wedge-shaped protuberances, the greatest dimension of which runs parallel with the length of the body. Each of these protuberances rests on a polygonal basis, and all these polygonal bases fit together, forming a sort of mosaic. On the dorsal and anal fin the little pricks are arranged in rows parallel with the longitudinal axis of the fin.

The outer margin of the caudal fin presents dermal ossifications of greater size to the number of eight. These ossicles, the presence of which led Ranzani to set up a separate genus *Ozodura*, may be noticed more or less with the four specimens in the Leyden Museum. They are greatest with the two specimens lacking the folded band, viz. that from the Dutch coast and that captured near Leghorn. The size of these ossicles in the margin of the caudal fin may not improbably one day be made one of the characteristics of the species.

Our specimen was of a dusky-brown colour, whilst the part of the body situated underneath the mouth, the eye and the pectoral fin, and in front of the anal fin was of a silvery tinge. It has been carefully mounted and now makes part of the collections of the Leyden Museum.



R. Raar ad nat. del. et lith. P. W. M. Trap impr.

Orthragoriscus mola (?) *Linné.*